

power, [and] a layer-shaped heating conductor being
embedded in the heating element,

10 wherein the layer-shaped heating conductor is arranged in
a layer plane of the layer structure to obtain an at least
approximately homogeneous distribution of the heating power
over a cross-section of the layer structure, the layer plane
being disposed between the function layer and the cover layer.

3. (Amended) The planar sensor element according to *relant 26 or 32*
claim 1, *see p. 3, 15 & 21*

5 wherein, [when] before the layer structure is
[unsintered] sintered, the function layer [structure further]
includes[:] at least two function layer-side foils[,] and the
cover layer includes at least one cover foil-side foil, the
cover foil-side foil having a predetermined thickness, and

10 wherein a total thickness of the at least two function
layer-side foils is at least approximately equal to the
predetermined thickness.

REMARKS

Claims 1 - 7 remain pending in the present application.
In view of the above amendments and the following remarks, it
is respectfully submitted that all of the presently pending
claims are allowable, and reconsideration is respectfully
requested.

Claims 1 - 5 stand rejected under 35 U.S.C. § 102(b) as
anticipated by U.S. Patent No. 4,505,806 ("Yamada '806") or by
U.S. Patent No. 4,505,807 ("Yamada '807"). Applicants
respectfully submit that neither Yamada '806 nor Yamada '807
anticipates the present claims as amended herein for the
following reasons.

The claimed invention of claim 1 relates to a planar
sensor element for determining at least one gas component.
The planar sensor element includes a layer structure that
includes a heating element that generates a heating power and

a layer-shaped heating conductor embedded in the heating element. Claim 1 has been amended herein to recite that the layer structure includes a function layer and a cover layer as described, for example, on page 3, lines 7 - 26 of the specification. Claim 1 has been further amended herein to recite that the heating element is disposed between the function layer and the cover layer, which is fully supported by the specification, id., and clearly illustrated in the Figure. Claim 1 recites that the layer-shaped heating conductor is arranged in a layer plane of the layer structure to obtain an at least approximately homogeneous distribution of the heating power over the cross-section of the layer structure. Claim 1 has been amended herein to clarify that the layer plane is disposed between the function layer and the cover layer. The sensor element according to the present claims as amended herein has several advantages, including improved resistance to temperature variations and thermal shock and enhanced efficiency of the heating element. See, for example, page 2, lines 1 - 3 of the specification.

Yamada '806 describes two embodiments of an oxygen sensor. The second embodiment includes two intermediate board members 7b disposed between two board members 7a. Each of the intermediate board members 7b includes a heat-generating resistor 16a. One of the outer two board members 7a defines an oxygen pump element, and the other of the outer two board members 7a defines an oxygen concentration cell element. Neither of these two outer board members 7a defines a cover layer as set forth in the present claim 1 as amended herein. Insofar as no cover layer is defined, Yamada '806 additionally does not describe a heating element disposed between a functional layer and a cover layer as set forth in the present claim 1 as amended herein. Therefore, because Yamada '806 fails to describe each and every element as set forth in the present claim 1 as amended herein, such claim is not anticipated thereby. Verdegaal Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631 (Fed. Cir. 1987) ("A claim is

anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."). As to claims 2-5, which are dependent on claim 1, Applicants respectfully submit that these claims are patentable for at least the same reasons given in support of the patentability of claim 1.

Like Yamada '806, Yamada '807 describes an oxygen sensor, which includes an oxygen concentration cell element 1, an oxygen pump element 2 and a heater element disposed therebetween. Insofar as neither the oxygen cell element 1 nor the oxygen pump element 2 defines a cover layer as claimed, Yamada '807 fails to anticipate the present claim 1 as amended herein. Id. Additionally, as shown throughout the several Figures, particularly in Figures 2, 5, 8 and 10, the heater element is arranged asymmetrically with respect to the several layers. Unlike the claimed invention of claim 1, Yamada '807 does not describe a heating conductor arranged to obtain an at least approximately homogeneous distribution of heating power over a cross-section of a layer structure. As to claims 2-5, which are dependent on claim 1, Applicants respectfully submit that these claims are patentable for at least the same reasons given in support of the patentability of claim 1.

Claims 1 - 7 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,529,677 ("Schneider et al.") in view of either Yamada '806 or Yamada '807. Applicants respectfully submit that the combination of Schneider et al. and either Yamada '806 or Yamada '807 does not render obvious the present claims as amended herein for the following reasons.

As more fully set forth above, neither Yamada '807 nor Yamada '807 fairly teach or suggest the arrangement of the heating element with respect to the function layer and the cover layer. Referring to the several Figures of Schneider et

al., the heating unit C of the two disclosed embodiments of the sensor is not arranged between a function layer and a cover layer. Additionally, none of the cited art suggests the desirability of arranging a heating element as set forth in the present claims as amended herein to achieve an at least approximately homogeneous distribution of heating power. Therefore, Applicants respectfully submit that the combination of Schneider et al. and either Yamada '806 or Yamada '807 does not render obvious the present claims as amended herein. In re Royka, 490 F.2d 981 (C.C.P.A. 1974) (to establish prima facie obviousness, all claim limitations must be taught or suggested by the prior art).

With respect to the rejection of claims 1 - 7 under 35 U.S.C. § 112, first and second paragraphs, the Examiner will note that claim 3 has been amended herein to more clearly set forth that the layers are arranged in the claimed manner before the layer structure is sintered. Applicants respectfully submit that the foregoing amendment makes clear that the sensor is not unsintered and that the claims as amended herein fully comply with the requirements of § 112.

Finally, the Examiner will note that the specification has been amended herein to correctly describe that the sealing frame is made of an electrolyte material. No new matter has been added.

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

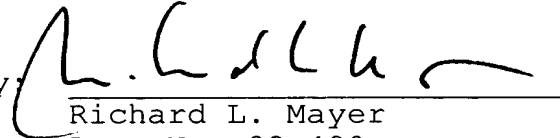
Respectfully submitted,

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